Formal drawings incorporating the changes set forth in the Request For Approval Of Drawing Changes, dated March 27, 2002, which were approved by the Examiner, accompany this Amendment together with a Letter Transmitting Formal Drawings.

Applicant thanks the Examiner for the indication that Claims 7, 10, 15, 16, 24, 27, 32, 33, 41, 44, 49 and 50 contain allowable subject matter and would be allowable if rewritten in independent form. Applicant has not rewritten these claims in independent form, however, since it is believed that all of the claims currently in the application are in condition for allowance, as discussed in more detail below.

Claims 1 to 6, 8, 9, 11 to 13, 18 to 23, 25, 26, 28 to 30, 35 to 40, 42, 43 and 45 to 47 were rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 5,701,404 (Stevens); and Claims 14, 17, 31, 34, 48 and 51 to 57 were rejected under § 103(a) over Stevens in view of U.S. Patent No. 5,805,783 (Ellson). Applicant has carefully considered the Examiner's remarks and the applied references and respectfully traverses the rejections.

The present invention concerns the transformation of a set of closed first curves, which define the boundary of a surface, to a set of closed loops using a set of continuous second curves provided on the surface. According to the invention, a set of crossover points is determined from intersection points where the set of closed first curves intersect the set of continuous second curves and which lie on the boundary of the surface. Curve intervals, which are delimited by the determined crossover points, are then selected from the set of closed first curves and the set of continuous second curves to form the set of closed loops in accordance with a predetermined rule.

With reference to particular claim language, independent Claims 1, 18 and 35 concern transforming a set of one or more closed first curves defining a boundary of a surface to a set of a plurality of closed loops, where the set of one or more closed first curves contains no self-crossover points. A set of continuous curves lying on the surface is provided, wherein each of the continuous second curves intersects and crosses over one or more of the closed first curves and wherein the set of continuous second curves contains no self-crossover points. A set of intersection points is determined, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface. A set of crossover points is determined from the set of intersection points. A plurality of curve intervals, delimited by the determined crossover points, are selected from the set of one or more closed first curves and the set of continuous second curves in accordance with a predetermined rule to form the set of a plurality of closed loops. The set of a plurality of closed loops abuts a substantial portion of the boundary of the surface.

The applied references are not understood to disclose or suggest the foregoing features of the present invention. In particular, the applied references are not understood to disclose or suggest at least the features of determining a set of crossover points from intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface defined by the one or more closed first curves and selecting a plurality of curves, delimited by the crossover points, from the set of one or more closed curves and the set of continuous second curves in accordance with a predetermined rule to form a set of closed loops.

Stevens concerns the trimming of a NURBS surface by projecting a curve onto a domain of the surface. According to Stevens, rays are projected from defined points on the curve towards the NURBS surface and trim regions are formed by connecting intersections of the rays with the NURBS surface. However, the forming of trim regions taught by Stevens is not understood to disclose forming a set of closed loops by selecting curve intervals from a set of closed first curves, which define the boundary of a surface, and a set of continuous second curves, where curve intervals are delimited by crossover points determined from intersections of the set of closed first curves and the set of continuous second curves.

The Office Action contends that beginning at line 37 of column 8, Stevens discloses determining a set of intersection points. Applicant respectfully submits that the intersections identified in Stevens differ from the intersection points determined according to the invention. Specifically, the present invention determines a set of intersection points where the set of closed first curves intersect the set of continuous second curves. Since the set of closed first curves defines the boundary of the surface, the determined intersection points are on the boundary of the surface. In contrast, Stevens merely discloses locating where rays projected from a curve intersect any part of the surface. Accordingly, Stevens is not understood to disclose determining a set of intersection points which lie on the boundary of the surface.

The Office Action further contends that the overlaps between trim regions discussed beginning at line 14 of column 13 in Stevens, correspond to the set of crossover points determined according to the present invention. Applicant respectfully disagrees

with this characterization of Stevens. First, the overlap of trim regions in Stevens is understood to occur when multiple curves being projected onto the surface overlap each other. This situation does not occur with the present invention since the set of second continuous curves contains no self-crossover points. Second, even if the overlaps of trim regions in Stevens were understood to correspond to the set of crossover points of the present invention, which Applicant does not concede, the overlaps in Stevens are not understood to be determined from a set of intersection points which lie on the boundary of the surface.

The Office Action also contends that the disclosure in Stevens beginning at line 24 of column 13, discloses selecting curve intervals from the set of closed first curves and the set of continuous second curves. Applicant again respectfully disagrees with this characterization. In column 13, Stevens is understood to disclose the use of a bounding box hierarchy to resolve overlaps between trim regions. Stevens is understood to form the trim regions by connecting the points on the surface where the projected rays intersect the surface. Forming trim regions by connecting points on a surface is not understood to disclose or even suggest selecting curve intervals, delimited by crossover points, from a set of closed first curves, which define the boundary of the surface, and a set of continuous second curves.

For the foregoing reasons, Stevens is not understood to disclose or suggest at least the features of determining a set of crossover points from intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface defined by the one or more closed first curves and selecting a

plurality of curves, delimited by the crossover points, from the set of one or more closed curves and the set of continuous second curves in accordance with a predetermined rule to form a set of closed loops.

Ellson, which was applied in the rejection of other claims in the application, is not understood to disclose or suggest anything to remedy the foregoing deficiencies of Stevens. Ellson concerns the creation of three-dimensional or depth image font text characters. However, Ellson is not understood to disclose or suggest at least the features of determining a set of crossover points from intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface defined by the one or more closed first curves and selecting a plurality of curves, delimited by the crossover points, from the set of one or more closed curves and the set of continuous second curves in accordance with a predetermined rule to form a set of closed loops.

Therefore, independent Claims 1, 18 and 35 are believed to be allowable over the applied references. Reconsideration and withdrawal of the § 102(e) rejection of Claims 1, 18 and 35 are respectfully requested.

Independent Claims 52, 53 and 54 concern modifying a typeface, font or character, wherein the typeface, font or character includes a set of one or more closed first curves defining a boundary of a surface of the typeface, font or character. The set of one or more closed first curves contains no self-crossover points. A set of continuous second curves lying on the surface is provided, wherein each of the continuous second curves intersects and crosses over one or more of the closed first curves and the set of continuous second curves contains no self-crossover points. A set of intersection points is determined,

where the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface. A set of crossover points is determined from the set of intersection points. A plurality of curve intervals, delimited by the determined crossover points, are selected from the set of one or more closed first curves and the set of continuous second curves to form a set of closed third curves. The set of closed third curves abuts a substantial portion of the boundary of the surface and forms a modified typeface, font or character.

The applied references are not understood to disclose or suggest the foregoing features of the present invention. In particular, the applied references are not understood to disclose or suggest at least the features of determining a set of crossover points from intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface defined by the one or more closed first curves and selecting a plurality of curves, delimited by the crossover points, from the set of one or more closed curves and the set of continuous second curves to form a set of closed third curves.

As discussed above with respect to Claim 1, 18 and 35, Stevens and Ellson are not understood to disclose or suggest at least the features of determining a set of crossover points from intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface defined by the one or more closed first curves and selecting a plurality of curves, delimited by the crossover points, from the set of one or more closed curves and the set of continuous second curves in accordance with a predetermined rule to form a set of closed loops. Therefore, Stevens

and Ellson are also not understood to disclose or suggest at least the features of determining a set of crossover points from intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface defined by the one or more closed first curves and selecting a plurality of curves, delimited by the crossover points, from the set of one or more closed curves and the set of continuous second curves to form a set of closed third curves.

Therefore, independent Claims 52, 53 and 54 are believed to be allowable over the applied references. Reconsideration and withdrawal of the § 103(a) rejection of Claims 52, 53 and 54 are respectfully requested.

Independent Claims 55, 56 and 57 concern modifying a typeface, font or character, where the typeface, font or character includes a set of one or more closed first curves defining a boundary of a surface of the typeface, font or character. The set of one or more closed first curves contains no self-crossover points. A set of continuous second curves lying on the surface is provided, where each of the continuous second curves intersects and crosses over one or more of the closed first curves and the set of continuous second curves contains no self-crossover points. A set of intersection points is determined, where the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface. A set of crossover points is determined from the set of intersection points. Unmarked adjacent crossover points are selected from the set of determined crossover points to form a closed loop. The selected adjacent crossover points are then marked. The steps of selecting and marking adjacent crossover points are repeated until a set of closed loops have been

formed, where the set of closed loops abuts a substantial portion of the boundary of the surface and forms a modified typeface, font or character.

The applied references are not understood to disclose or suggest the foregoing features of the present invention. In particular, the applied references are not understood to disclose or suggest at least the features of determining a set of crossover points from intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface defined by the one or more closed first curves and selecting unmarked crossover points from the set of crossover points to form a closed loop.

As discussed above with respect to Claims 1, 18 and 35, Stevens and Ellson are not understood to disclose or suggest determining a set of crossover points from intersection points where a set of closed first curves, which define a boundary of the surface, intersect a set of continuous second curves and which lie on the boundary of the surface. Therefore, Stevens and Ellson are also not understood to disclose or suggest at least the features of determining a set of crossover points from intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface defined by the one or more closed first curves and selecting unmarked crossover points from the set of crossover points to form a closed loop.

Therefore, independent Claims 55, 56 and 57 are believed to be allowable over the applied references. Reconsideration and withdrawal of the § 103(a) rejection of Claims 55, 56 and 57 are respectfully requested.

New independent Claim 58 concerns a method for transforming a set of closed first curves defined on a surface. A pattern comprising a set of continuous second curves is provided for projection over the set of closed first curves upon the surface. Crossover points of the set of closed first curves and the set of continuous second curves are determined and closed loops are generated in accordance with the determined crossover points. The closed loops are filled with a predetermined color.

Stevens and Ellson are not understood to disclose or suggest filling closed loops generated in accordance with determined points where a set of closed first curves and a set of continuous second curves crossover with a predetermined color. Therefore, Claim 58 is believed to be allowable over the applied references.

The other claims in the application are dependent from the independent claims discussed above and are therefore believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicant's undersigned attorney may be reached in our Costa Mesa, California, office by telephone at (714) 540-8700. All correspondence should be directed to our address given below.

Respectfully submitted,

Andrew D. Mickelson

Attorney for Applicant

Registration No. 50,957

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-2200
Facsimile: (212) 218-2200

CA_MAIN 49944 v 1

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Twice Amended) A method [for] of transforming a set of one or more closed first curves defining a boundary of a surface to a set of a plurality of closed loops, wherein the set of one or more closed first curves contains no self-crossover points, the method comprising the steps of:

providing a set of continuous second curves lying on the surface, wherein each of the continuous second curves intersects and crosses over one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

determining a set of intersection points, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface;

determining a set of crossover points from the determined set of intersection points; and

selecting a plurality of curve intervals, delimited by the determined crossover points, from the set of one or more closed first curves and the set of continuous second curves in accordance with a predetermined rule to form the set of a plurality of closed loops, whereby the set of a plurality of closed loops abuts a substantial portion of the boundary of the surface.

4. (Twice Amended) A method as claimed in claim [2] 3, wherein when it is determined in said determining substep that the last marked crossover point is not a first point in a closed loop, the curve interval is selected from the set of one or more closed first curves or the set of continuous second curves, wherein the selected curve interval is the first curve interval [located] encountered around the last marked crossover point in a second direction starting from the previously selected curve interval and which continues in a third direction and terminates at a next adjacent unmarked crossover point.

5. (Twice Amended) A method as claimed in claim [2] 4, wherein said substep of ordering the set of crossover points comprises ordering the crossover points according to their position along the set of one or more closed first curves in a fourth direction.

6. (Twice Amended) A method as claimed in claim 5, wherein the first direction and the fourth direction are in a forward direction, the third direction is either in a positive or a negative direction, and the second direction is in the same direction as a backward direction.

7. (Twice Amended) A method as claimed in claim 5, wherein the first direction and the fourth direction are in a backward direction, the third direction is either in a positive or a negative direction, and the second direction is in the same direction as a forward direction.

18. (Twice Amended) An apparatus for transforming a set of one or more closed first curves defining a boundary of a surface to a set of a plurality of closed loops, wherein the set of one or more closed first curves contains no self-crossover points, the apparatus comprising:

providing means for providing a set of continuous second curves lying on the surface, wherein each of the continuous second curves intersects and crosses over one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

first determining means for determining a set of intersection points, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface;

second determining means for determining a set of crossover points from the set of intersection points; and

first selecting means for selecting a plurality of curve intervals, delimited by the determined crossover points, from the set of one or more closed first curves and the set of continuous second curves in accordance with a predetermined rule to form the set of a plurality of closed loops, whereby the set of a plurality closed loops abuts a substantial portion of the boundary of the surface.

19. (Twice Amended) An apparatus as claimed in claim 18, wherein said first selecting means comprises:

ordering means for ordering the set of crossover points in accordance with a

predetermined order;

first marking means for marking one of the crossover points that is highest in the predetermined order and that has not been previously marked;

second selecting means for selecting a curve interval starting at a first point and terminating at an unmarked crossover point;

second marking means for marking the terminating crossover point of the selected curve interval;

third selecting means for selecting a curve interval starting at the previous terminating crossover point and terminating at an unmarked crossover point;

third marking means for marking the current terminating crossover point of the selected curve interval;

third determining means for determining if a last marked crossover point is the first point in a closed loop, and if so performing the operations of said second selecting means and said second marking means, or if not, performing the operations of said third selecting means and said [second] third marking means;

means for repetitively performing the operations of said third determining means until the closed loop is formed; and

means for repetitively performing the operations of said first marking means and said third determining means until all possible closed loops have been formed.

21. (Twice Amended) An apparatus as claimed in claim [19] 20, wherein said third selecting means selects the curve interval from the set of one or more closed first

curves or the set of continuous second curves, wherein the selected curve interval is the first curve interval [located] encountered around the last marked crossover point in a second direction starting from the previously selected curve interval and which continues in a third direction and terminates at a next adjacent unmarked crossover point.

22. (Twice Amended) An apparatus as claimed in claim [19] 21, wherein said ordering means orders the set of crossover points according to their position along the set of one or more closed first curves in a fourth direction.

23. (Twice Amended) An apparatus as claimed in claim 22, wherein the first direction and the fourth direction are in a forward direction, the third direction is either in a positive or a negative direction, and the second direction is in the same direction as a backward direction.

24. (Twice Amended) An apparatus as claimed in claim 22, wherein the first direction and the fourth direction are in a backward direction, the third direction is either in a positive or a negative direction, and the second direction is in the same direction as a forward direction.

35. (Twice Amended) A computer program product comprising a computer readable medium including a computer program for transforming a set of one or more closed first curves defining a boundary of a surface to a set of a plurality of closed loops,

wherein the set of one or more closed first curves contains no self-crossover points, the computer program product comprising:

providing means for providing a set of continuous second curves lying on the surface, wherein each of the continuous second curves intersects and crosses over one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

first determining means for determining a set of intersection points, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface;

second determining means for determining a set of crossover points from the set of intersection points; and

first selecting means for selecting a plurality of curve intervals, delimited by the determined crossover points, from the set of one or more closed first curves and the set of continuous second curves in accordance with a predetermined rule to form the set of a plurality of closed loops, whereby the set of a plurality of closed loops abuts a substantial portion of the boundary of the surface.

36. (Twice Amended) A computer program product as claimed in claim 35, wherein said first selecting means comprises:

ordering means for ordering the set of crossover points in accordance with a predetermined order;

first marking means for marking one of the crossover points that is highest

in the predetermined order and that has not been previously marked;

second selecting means for selecting a curve interval starting at a first point and terminating at an unmarked crossover point;

second marking means for marking the terminating crossover point of the selected curve interval;

third selecting means for selecting a curve interval starting at the previous terminating crossover point and terminating at an unmarked crossover point;

third marking means for marking the current terminating crossover point;

third determining means for determining if the last marked crossover point is the first point in a closed loop, and if so performing the operations of said second selecting means and said second marking means, or if not, performing the operations of said third selecting means and said [second] third marking means;

means for repetitively performing the operations of said third determining means until the closed loop is formed; and

means for repetitively performing the operations of said first marking means and said third determining means until all possible closed loops have been formed.

38. (Twice Amended) A computer program product as claimed in claim [36] 37, wherein said third selecting means selects the curve interval from the set of one or more closed first curves or the set of continuous second curves, wherein the selected curve interval is the first curve interval [located] encountered around the last marked crossover piont in a second direction starting from the previously selected curve interval and which

continues in a third direction and terminates at a next adjacent unmarked crossover point.

39. (Twice Amended) A computer program product as claimed in claim [36] 38, wherein said ordering means orders the set of crossover points according to their position along the set of one or more closed first curves in a fourth direction.

40. (Twice Amended) A computer program product as claimed in claim 39, wherein the first direction and the fourth direction are in a forward direction, the third direction is either in a positive or a negative direction, and the second direction is in the same direction as a backward direction.

41. (Twice Amended) A computer program product as claimed in claim 39, wherein the first direction and the fourth direction are in a backward direction, the third direction is either in a positive or a negative direction, and the second direction is in the same direction as a forward direction.

46. (Twice Amended) A computer program product as claimed in claim 35, wherein said providing means comprises means for retrieving the set of continuous second curves from storage.

52. (Twice Amended) A method of modifying a typeface, font, or character, wherein the typeface, font, or character comprises a set of one or more closed first curves

defining a boundary of a surface of the typeface, font, or character, wherein the set of one or more closed first curves contains no self-crossover points, the method comprises the steps of:

providing a set of continuous second curves lying on the surface, wherein each of the continuous second curves intersects and crosses over one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

determining a set of intersection points, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface;

determining a set of crossover points from the set of intersection points; and

selecting a plurality of curve intervals, delimited by the determined crossover points, from the set of one or more closed first curves and the set of continuous second curves to form a set of closed third curves, wherein the set of closed third curves abuts a substantial portion of the boundary of the surface and forms a modified typeface, font, or character.

53. (Twice Amended) An apparatus for modifying a typeface, font, or character, wherein the typeface, font, or character comprises a set of one or more closed first curves defining a boundary of a surface of the typeface, font, or character, wherein the set of one or more closed first curves contains no self-crossover points, the apparatus comprising:

means for providing a set of continuous second curves lying on the surface,

wherein each of the continuous second curves intersects and crosses over one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

means for determining a set of intersection points, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface;

means for determining a set of crossover points from the set of intersection points; and

means for selecting a plurality of curve intervals, delimited by the determined crossover points, from the set of one or more closed first curves and the set of continuous second curves to form a set of closed third curves, wherein the set of closed third curves abuts a substantial portion of the boundary of the surface and forms a modified typeface, font, or character.

54. (Twice Amended) A computer program product comprising a computer readable medium including a computer program for modifying a typeface, font, or character, wherein the typeface, font, or character comprises a set of one or more closed first curves defining a boundary of a surface of the typeface, font, or character, wherein the set of one or more closed first curves contains no self-crossover points, the computer program product comprising:

means for providing a set of continuous second curves lying on the surface, wherein each of the continuous second curves intersects and crosses over one or more of

the closed first curves and the set of continuous second curves contains no self-crossover points;

means for determining a set of intersection points, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface;

means for determining a set of crossover points from the set of intersection points; and

means for selecting a plurality of curve intervals, delimited by the determined crossover points, from the set of one or more closed first curves and the set of continuous second curves to form a set of closed third curves, wherein the set of closed third curves abuts a substantial portion of the boundary of the surface and forms a modified typeface, font, or character.

55. (Twice Amended) A method of modifying a typeface, font, or character, wherein the typeface, font, or character comprises a set of one or more closed first curves defining a boundary of a surface of the typeface, font, or character, wherein the set of one or more closed first curves contains no self-crossover points, the method comprises the steps of:

providing a set of continuous second curves lying on the surface, wherein each of the continuous second curves intersects and crosses over one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

determining a set of intersection points, wherein the intersection points are

those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface;

determining a set of crossover points from the set of intersection points;

selecting unmarked adjacent crossover points from the set of determined crossover points to a form a closed loop;

marking the selected adjacent crossover points; and

repetitively performing the selecting and marking steps until a set of closed loops have been formed, wherein the set of closed loops abuts a substantial portion of the boundary of the surface and forms a modified typeface, font, or character.

56. (Twice Amended) Apparatus for modifying a typeface, font, or character, wherein the typeface, font, or character comprises a set of one or more closed first curves defining a boundary of a surface of the typeface, font, or character, wherein the set of one or more closed first curves contains no self-crossover points, the apparatus comprising:

means for providing a set of continuous second curves lying on the surface, wherein each of the continuous second curves intersects and crosses over one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

means for determining a set of intersection points, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface;

means for determining a set of crossover points from the set of intersection points;

means for selecting unmarked adjacent crossover points from the set of determined crossover points to a form a closed loop;

means for marking the selected adjacent crossover points; and

means for repetitively performing the operations of said selection means and said marking means until a set of closed loops have been formed, wherein the set of closed loops abuts a substantial portion of the boundary of the surface and forms a modified typeface, font, or character.

57. (Twice Amended) A computer program product comprising a computer readable medium including a computer program for modifying a typeface, font, or character, wherein the typeface, font, or character comprises a set of one or more closed first curves defining a boundary of a surface of the typeface, font, or character, wherein the set of one or more closed first curves contains no self-crossover points, the computer program comprising:

means for providing a set of continuous second curves lying on the surface, wherein each of the continuous second curves intersects and crosses over one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

means for determining a set of intersection points, wherein the intersection points are those points where the one or more closed first curves intersect the continuous

second curves and which lie on the boundary of the surface;

means for determining a set of crossover points from the set of intersection points;

means for selecting unmarked adjacent crossover points from the set of determined crossover points to [a] form a closed loop;

means for marking the selected adjacent crossover points; and

means for repetitively performing the operations of said selection means and said marking means until a set of closed loops have been formed, wherein the set of closed loops abuts a substantial portion of the boundary of the surface and forms a modified typeface, font, or character.

CA_MAIN 49941 v 2